METHANOL

SECTION 1. IDENTIFICATION

Product Identifier	METHANOL
Other Means of Identification	Methyl hyrate, wood alcohol, Methanol (99 + MOL%), Methanol Anhydrous
Other Identification	EU EINECS Number: 200-659-6
Recommended Use	Solvent, Fuel, Feedstock.
Restrictions on Use	None known.
Manufacturer/Supplier Identifier	Caledon Laboratories Ltd, 40 Armstrong Avenue, Georgetown, Ontario, L7G-4R9, (905) 877-0101, www.caledonlabs.com
Emergency Phone No.	CANUTEC, (613) 996-6666
SDS No.	0109

SECTION 2. HAZARD IDENTIFICATION

Classification

Flammable liquid - Category 2; Acute toxicity (Oral) - Category 3; Acute toxicity (Dermal) - Category 3; Acute toxicity (Inhalation) - Category 3; Eye irritation - Category 2A; Respiratory sensitization - Category 1B; Specific target organ toxicity (single exposure) - Category 1

Label Elements

Danger
Hazard Statement(s):
Highly flammable liquid and vapour.
Toxic if swallowed, in contact with skin or if inhaled.
Causes serious eye irritation.
May damage fertility or the unborn child.
Causes damage to organs.
Precautionary Statement(s):
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical, ventilating, and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing vapours.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
IF SWALLOWED: Immediately call a POISON CENTRE or doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If exposed: Call a POISON CENTRE or doctor.
Rinse mouth.
Take off immediately all contaminated clothing and wash it before reuse.
In case of fire: Use water spray or fog to extinguish.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Dispose of contents/container to a licensed waste management site

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance:

Chemical Name	CAS No.	%	Other Identifiers
Methanol	67-56-1	100	EU EINECS/ELINCS Number: 200-659-6

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Move to fresh air. Keep at rest in a position comfortable for breathing. If breathing is difficult, trained personnel should administer emergency oxygen if advised to do so by Poison Centre or doctor.

Skin Contact

Rinse skin with water or shower. Take off immediately contaminated clothing, shoes and leather goods (e.g. watchbands, belts). If exposed or concerned, call a Poison Centre or doctor. Clean clothing, shoes and leather goods.

Eye Contact

Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Continue rinsing. Ensure that folded skin of eyelids is thoroughly washed with water. Obtain medical attention if pain, blinking or redness persist.

Ingestion

Rinse mouth with water. Do NOT induce vomiting. Obtain emergency medical attention. Never give anything by mouth to an unconscious person.

First-aid Comments

First-aid measures general: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). Call a POISON CENTRE or doctor/physician. Methanol is toxic and flammable. Take proper precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment and remove any sources of ignition).

Most Important Symptoms and Effects, Acute and Delayed

Symptoms/injuries after inhalation: Symptoms may include dizziness, headache, nausea and loss of coordination. CNS depression. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to light, blurred, double and/or snowy vision, and blindness.
Symptoms/injuries after skin contact: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Repeated and/or prolonged skin contact may cause irritation. Symptoms/injuries after eye contact: Moderate eye irritant.
Symptoms/injuries after ingestion: Ingestion of as little as 10 ml of methanol can cause blindness and 30 ml (1 ounce) can cause death if victim is not treated. Ingestion causes mild central nervous system (CNS) depression with nausea, headache, vomiting, dizziness, incoordination and an appearance of drunkenness. Metabolic acidosis and severe visual effects can occur following an 8-24 hour latent period. Coma and death, usually due to respiratory failure, may occur if medical treatment is not received. Visual effects may include reduced reactivity and/or increased sensitivity to

light, blurred, double and/or snowy vision, and blindness.
Chronic symptoms: Has caused teratogenic and fetotoxic effects, in the absence of maternal toxicity in animal studies.

Immediate Medical Attention and Special Treatment

Special Instructions

Treat symptomatically. The severity of outcome following methanol ingestion may be more related to the time between ingestion and treatment, rather than the amount ingested. Therefore, there is a need for rapid treatment of any ingestion exposure. Antidote is fomepizole which enhances elimination of metabolic formic acid. This must be administered by a physician only. For specialist advice physicians should contact the Poison Control Centre.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Special "alcohol resistant fire-fighting foams".

Unsuitable Extinguishing Media

Water is not effective for extinguishing a fire. It may not cool product below its flash point. If water is used for cooling, the solution will spread if not contained. Mixtures of methanol and water at concentrations greater than 20% methanol are still considered flammable.

Specific Hazards Arising from the Product

Extremely flammable liquid and vapour. Can ignite at room temperature. Releases vapour that can form explosive mixture with air. Burns with an invisible flame. May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a fire and/or health hazard. Closed containers may rupture violently when heated releasing contents.
In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; very toxic, flammable formaldehyde.

Special Protective Equipment and Precautions for Fire-fighters

Firefighting instructions: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting: Fire fighters should wear complete protective clothing including self-contained breathing apparatus.
Chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Eliminate all ignition sources. Use grounded, explosion-proof equipment. Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

Stop or reduce leak if safe to do so. Small spills or leaks: do NOT use combustible materials such as sawdust. Place used absorbent into suitable, covered, labelled containers for disposal. Large spills or leaks: review Section 7 (Handling) of this safety data sheet before proceeding with clean-up. Cover the spill surface with the appropriate type of foam to reduce the release of vapour. Place used absorbent into suitable, covered, labelled containers for disposal. Contaminated absorbent poses the same hazard as the spilled product. Store recovered product in suitable containers that are: tightly-covered.

Other Information

Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Additional hazards when processed: Handle empty containers with care because residual vapours are flammable. Precautions for safe handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. No naked lights. No smoking. Use only explosion-proof equipment. Use only non-sparking tools. Do not breathe Vapours. Hygiene measures: Do not eat, drink or smoke when using this product. Wash hands and forearms thoroughly after handling.

Conditions for Safe Storage

Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources. Store in a closed container. Restrict access to authorized personnel only. Electrically bond and ground containers. Ground clips must contact bare metal. Packaging material: SUITABLE MATERIAL: Steel. Stainless steel. Iron. Glass. MATERIAL TO AVOID: Lead. Aluminum. zinc. Polyethylene. PVC.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	**TWA**	**STEL**	**TWA**	**Ceiling**	**8-hr TWA**	**TWA**
Methanol	200 ppm	250 ppm	200 ppm			

Appropriate Engineering Controls

Do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use local exhaust ventilation and enclosure, if necessary, to control amount in the air. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored. Provide eyewash and safety shower if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles and face shield when contact is possible.

Skin Protection

Wear Viton® /, butyl rubber gloves. Gloves must be replaced after each use and whenever signs of wear or perforation appear. Butyl rubber: Breakthrough time (maximum wearing time) : > 8 hours. Viton: Breakthrough time (maximum wearing time) : 1-4 Hours.

Respiratory Protection

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear a positive pressure full face self-contained breathing apprartus or a full face supplied air respirator.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Clear.
Odour	Alcoholic
Odour Threshold	4.2 - 5960 ppm
pH	Not applicable
Melting Point/Freezing Point	-97.8 ºC (-144.0 ºF) (melting); -97.6 ºC (-143.7 ºF) (freezing)
Initial Boiling Point/Range	64.7 ºC (148.5 ºF)
Flash Point	11 ºC (52 ºF)
Evaporation Rate	4.1
Flammability (solid, gas)	Not available
Upper/Lower Flammability or Explosive Limit	19% (upper); 12% (lower)
Vapour Pressure	12.8 kPa at 20 ºC
Vapour Density (air = 1)	1.1

Relative Density (water = 1)	0.791 - 0.793 at 20 ºC
Solubility	Slightly soluble in water
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	464 ºC (867 ºF)
Decomposition Temperature	Not available
Viscosity	Not available (kinematic); 0.8 centipoises at 25 ºC (dynamic)

Other Information

Physical State	Liquid
Molecular Formula	CH3OH
Molecular Weight	32.04

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable. Highly flammable liquid and vapour. May form flammable/explosive vapour-air mixture. Hygroscopic.

Possibility of Hazardous Reactions

Under fire conditions closed containers may rupture or explode.

Conditions to Avoid

High temperatures. Open flames, sparks, static discharge, heat and other ignition sources. Sunlight.

Incompatible Materials

Oxidizing agents (e.g. peroxides), strong acids (e.g. hydrochloric acid), strong bases (e.g. sodium hydroxide). Methanol is not compatible with gasket and O-rings materials made of Buna-N and Nitrile.

Hazardous Decomposition Products

Carbon monoxide. Carbon dioxide. May release flammable gases. Formaldehyde.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Methanol	64000 mg/kg (rat) (4-hour exposure)	5600 mg/kg (rat)	15800 mg/kg (rabbit)

Skin Corrosion/Irritation

Not classified.

Serious Eye Damage/Irritation

Animal tests show serious eye irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Symptoms may include headache, nausea, vomiting, dizziness, drowsiness and confusion. A severe exposure may cause stomach pain, muscle pain, difficult breathing and coma. Vision can be impaired and permanent blindness can result. There may be other permanent effects on the nervous system e.g. tremor, seizures.

Skin Absorption

Harmful based on human experience.

Ingestion

If small amounts are swallowed Symptoms may include headache, nausea, vomiting, dizziness, drowsiness and confusion. A severe exposure may cause stomach pain, muscle pain, difficult breathing and coma. Vision can be impaired and permanent blindness can result. There may be other permanent effects on the nervous system e.g. tremor, seizures.

Aspiration Hazard

Not classified.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Not classified.

Respiratory and/or Skin Sensitization

Not classified.

Carcinogenicity

Not specifically listed.

Reproductive Toxicity

Development of Offspring

May harm the unborn child.

Sexual Function and Fertility

May cause effects on sexual function and/or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Not classified.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Methanol	15400-29400 mg/L (96-hour)	> 10000 mg/L (Daphnia magna (water flea); 48-hour)		22000 mg/L (Selenastrum capricornutum (algae); 72-hour)

Persistence and Degradability

Rapidly degradable.

Bioaccumulative Potential

This product and its degradation products are not expected to bioaccumulate based on the fish bioconcentration factor (BCF). This product and its degradation products are not expected to bioaccumulate based on the n-octanol/water partition coefficient (Log Kow).

Mobility in Soil

Mobile.

Other Adverse Effects

Avoid release to the environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Recycle and reuse product, if possible. Dispose of contents and container in accordance with local, regional, national and international regulations. The container for this product can present explosion or fire hazards, even when emptied. Do not cut, puncture, or weld on or near this container. This product and its container must be disposed of as hazardous waste. Do NOT dump into any sewers, on the ground or into any body of water. Treat waste in an approved waste disposal facility.

SECTION 14. TRANSPORT INFORMATION

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	UN1230	Methanol	3 (6.1)	II
US DOT	UN1230	Methanol	3 (6.1)	II
IATA (Air)	UN1230	Methanol	3 (6.1)	II
IMO (Marine)	UN1230	Methanol	3 (6.1)	II

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

WHMIS 1988 Classification

Class B2 Class D1A Class D2A; D2B

B2 - Flammable Liquid; D1A - Very Toxic; D2A - Very Toxic; D2B - Toxic

USA

Toxic Substances Control Act (TSCA) Section 8(b)

Listed on the TSCA Inventory.

Additional USA Regulatory Lists

SARA Title III - Section 302: Listed SARA Title III - Section 311/312: Fire hazard Immediate (acute) health hazard.

SECTION 16. OTHER INFORMATION

NFPA Rating	**Health - 1 Flammability - 3 Instability - 0**
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